



<https://www.ijmsbr.com/>

Impact Factor: 6.049

Study on the Path to Improve the Quality of Cultivating Postgraduate under the ‘Learning-centered + Knowledge Construction’ Model

Author’s Details: HAN Xueli , YANG Shunhua

School of Finance and Economics, Jiangsu University, Zhenjiang, China 212013

Abstract:

Comprehensively improving the quality of postgraduate cultivating needs to continuously promote the innovation of postgraduate education mode. Starting from the investigation of the current situation of postgraduate cultivating in colleges and universities, we put forward the ‘learning-centered + knowledge construction’ cultivating mode, which puts postgraduates at the core of education, stimulates their endogenous motivation and potential, carries out independent learning and construction, and challenges the limits of their own ability to form a breakthrough. In order to build the ‘learning-centered + knowledge construction’ model, it is necessary to take measures such as innovative educational concepts, constructing a new type of teacher-student relationship, focusing on shaping innovative personalities, strengthening practical education, creating inspirational teaching situations, promoting the diversification of evaluation, accelerating digital empowerment, and so on, so as to open up a new world of postgraduate education.

Keywords: ‘learning-centered + knowledge construction’; ‘teaching-centered + knowledge transfer’; educational model; postgraduate cultivating

Fund project:

- 1.2023 Postgraduate Education Reform Project of Jiangsu University (XJGKT23-004);
- 2.2023 Higher Education Reform Research Project of Jiangsu University (2023JGYB002)

1. Introduction

The 20th Party Congress proposed to accelerate the construction of a high-quality education system and comprehensively improve the quality of independent cultivating of talents.¹ As an important carrier of higher education and the main position of teaching reform in colleges and universities, the value and significance of postgraduate classroom to the quality of talent cultivation is particularly important. However, in the process of postgraduate cultivating in colleges and universities, despite the emphasis on ‘student-centered’, but confined to the traditional epistemology, the concept of knowledge and the concept of education, in the actual teaching, or to varying degrees, showing the emphasis on teaching ‘teaching’ rather than ‘learning’ tendency. ‘Learning’ tendency, thus inhibiting the interest, initiative and creativity of graduate students, hindering the improvement of cultivating quality. In order to fundamentally change this situation, constructivism should be fully applied to postgraduate education, and the ‘learning-centered + knowledge construction’ model should be implemented to better stimulate postgraduates' interest in learning, promote their independent learning, independent inquiry, independent construction, and improve their comprehensive quality and innovation ability.

2.Theoretical study

2.1.Constructivist theory

Constructivism emphasises the important role of the cognitive subject in the cognitive process, i.e., the subject interacts with the object through practice, and then generates knowledge of the objective world. It is also believed that only by using the existing cognitive structure within oneself to perceive the external world, and by organizing, sorting, coordinating, reasoning and judging the experience gained, can one give meaning to things and gain knowledge of the external world. Therefore, human knowledge of the world is a dynamic and creative process of generation and construction, rather than a passive process of acceptance. Compared with traditional education theory, constructivism places more emphasis on 'learning', stresses the subjective position of students in the teaching and learning process, and guides students to actively explore and construct knowledge, especially in postgraduate education. Therefore, constructivism is of great significance in reforming the old model of graduate education, building a new model of graduate education, constructing a high-quality education system, and comprehensively improving the quality of graduate cultivating.

2.2.Education Mode

Education mode plays an important role in the cultivation of postgraduates. Advanced education mode can better stimulate postgraduates' interest in learning and endogenous motivation, promote their independent learning and independent investigation, and enhance their research ability, innovative spirit and creative ability. For a long time, there have been two educational models with different focuses in the education sector, i.e. 'teaching-centred + knowledge transfer' and 'learning-centred + knowledge construction'.

2.2.1. 'Teaching-centred + Knowledge transfer'

'Teaching-centred + knowledge transfer' advocates that in the process of cultivating students, 'teaching' is the main focus, placing the teacher at the centre of education, and the purpose of education is to transfer knowledge to students. As a traditional teaching model, 'teaching-centred + knowledge transfer' certainly has its own strengths, especially in the systematic and complete completion of the syllabus content has certain advantages. However, this model fails to penetrate into the essence of knowledge, deeply revealing the essential characteristics of knowledge and the process of generating knowledge, and the subjectivity, initiative and creativity of students in the process of learning and understanding objective things are greatly weakened. For many students, the learning process is tantamount to a forced indoctrination, mechanical cultivating, forced to accept and memorize the process, the test is finished, used up that is forgotten, the new knowledge is not really integrated into the cognitive structure, into their own as an organic component, not to mention the migration of knowledge, and flexible application.

2.2.2. 'Learning-centred + knowledge construction'

'Learning-centred + knowledge construction' comes from constructivism, refers to the process of cultivation, the students placed in the core position of education, giving students full subjectivity, initiative, by mobilizing the interest and enthusiasm of students to learn, to stimulate their endogenous motivation and potential, guided by teachers, independent learning, independent inquiry, independent construction, and constantly challenge the limits of their own abilities. Under the guidance of the teacher, they can carry out independent learning, independent enquiry and independent construction, and constantly challenge the limits of their own ability to form a breakthrough, so as to improve the learning ability, application ability and creativity of the students. This model has completely changed the 'teaching-centred + knowledge transfer' model: learning is no longer a mechanical and passive process of receiving knowledge, but a process of constructing knowledge actively by students themselves. Students' autonomy and creativity are fully released, and learning becomes a process to satisfy their own interests and hobbies, give full play to their

own strengths and realize their self-worth.

2.3. Connotation of Postgraduate Education

Postgraduate education is the main position for cultivating high-level innovative talents. Compared with undergraduate education, postgraduate education has obvious characteristics: first, the cultivation goal is different. Undergraduate cultivating goal for all aspects of professional talents, the research ability of students, innovation, creativity, there is no clear requirements; while postgraduates are clearly put forward must have a certain degree of research ability, able to independently find out the problem, analyze the problem and solve the problem. Postgraduate education puts more emphasis on teaching students according to their aptitude, shaping their personalized personality, and cultivating them into outstanding talents with outstanding contributions to the society according to their different interests, hobbies and strengths. Secondly, the teaching content is different. Postgraduate education is based on the frontiers of disciplines, social reality and specific problems, the teaching content is not limited by books, classrooms, disciplines and specialties, not limited by the existing knowledge, and it is required to transcend the specialties, disciplines and the existing understanding of human beings, and it is all oriented to solving problems and enhancing the ability to acquire, master and construct knowledge. Therefore, the teaching content is richer, the academic vision is broader and more open. Thirdly, the cultivation methods are different. Postgraduate education puts more emphasis on the combination of independent experience, learning, inquiry and teacher-student consultation, the combination of brain and hand, in-class and out-of-class, theoretical learning and social practice, the combination of high professional precision and broad knowledge, and the combination of digestion and absorption of knowledge and the generation and construction of knowledge.

In order to build postgraduates into complex and innovative talents who can solve problems independently, have research ability and strong competitiveness, postgraduate teachers should guide and encourage postgraduates to make efforts to master complex ways of thinking, research methods and modern research tools, especially computers, networks, cloud computing, big data, blockchain, AI, meta-universe, etc., to constantly challenge themselves, set new benchmarks, and to improve their own all-round abilities in all aspects.

3. The analysis of the current situation of postgraduate 'learning-centred + knowledge construction' education model

With the continuous development of economy and society, the quality of postgraduate education has been greatly improved: educational theories are constantly updated, teaching content is richer, teaching methods are more diversified, digital teaching technology and means have been widely used, and the evaluation system is more reasonable..... Postgraduate education has provided a large number of high-quality talents for the development of society. However, in-depth examination of the reality of postgraduate education there are still many shortcomings, the current state of development and to speed up the goal of the great rejuvenation of the Chinese nation and better cope with the increasing international competition situation there is still a large gap, the lack of sufficient competitiveness with the talent of the advanced countries among the competitiveness. In order to improve the quality of postgraduate education as soon as possible, this study believes that we should absorb the teaching theories and experiences of advanced countries more fully and combine them with China's national conditions to build a 'learning-centred + knowledge construction' education model to make up for the shortcomings of the current postgraduate education.

Aiming at the problems that may exist in the actual operation of the 'learning-centred + knowledge construction' education model, this study conducted a questionnaire survey with graduate teachers and graduate students from different schools and majors in general colleges and universities as the target respondents, and finally obtained 213 questionnaires from teachers and 506 questionnaires from graduate

students, and teachers and graduate students participating in the questionnaire survey covered science, engineering, and engineering. Teachers and postgraduates in this survey cover science, engineering, medicine, economics and some other majors. 213 teachers aged 35-45 accounted for 45.07% of the total number of teachers, and those aged 45 or above accounted for 51.64% of the total number of teachers, most of them are middle-aged teachers; 70.89% of them have been teaching for more than 10 years, and they are rich in teaching experience, and they are the backbones of the postgraduate teacher group; in terms of titles, associate professors accounted for 43.19%, professors accounted for 43.19% and professors accounted for 43.19% of the total number of postgraduates. In terms of titles, associate professors accounted for 43.19% of the total number, professors accounted for 39% of the total number, and the rest were lecturers involved in postgraduate cultivating. Most of the postgraduates in this survey are in their third year, so the sample is representative.

3.1. General Situation

In the process of the survey, the first thing we need to know is the degree of teachers' awareness of the teaching mode of "learning-centred + knowledge construction", and it is clear from Figure 1 that most of the teachers have some knowledge of this teaching mode, but due to the influence of other factors, it has not been widely used in postgraduate teaching. Teachers position their roles as knowledge transmitters, classroom leaders and organizers, and collaborators, with equal weighting of the three positions, which also reflects to some extent the status and role of teachers in the educational process.

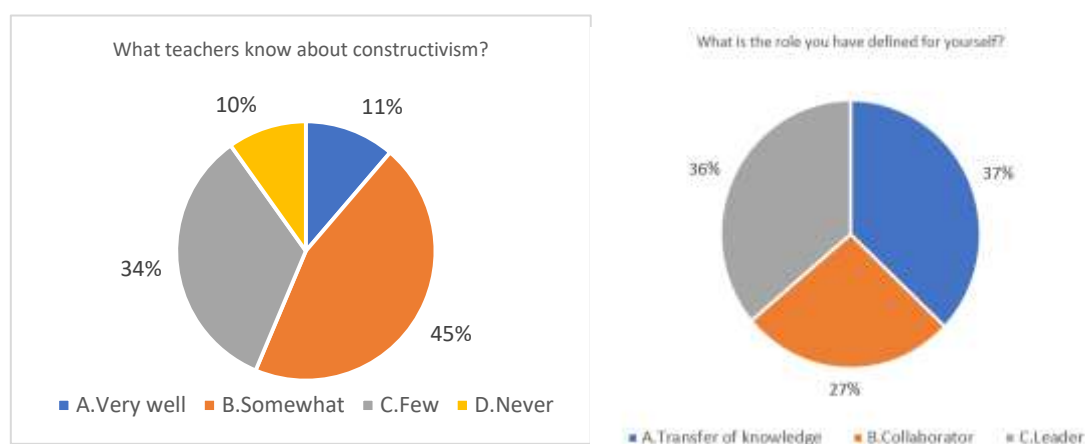


Fig1: Concept of education

The reason for this is that 'student-centered' has not yet become the concept of front-line teachers and has been internalized as their dominant idea, and some teachers still use traditional education concepts to guide postgraduate teaching. In this case, teachers start from their own subjective desire to treat students as containers and receivers of knowledge.ⁱⁱ This teaching method greatly inhibits the play of students' subjectivity, initiative and creativity, and the learning effect is greatly reduced.

3.2. Classroom situation

Classroom is the starting point of the reform of graduate teaching mode, and it is the key link to guarantee the quality of graduate cultivating. By focusing on the questionnaires, the main problems of the classroom are analyzed in four aspects: teaching design, teaching content, teaching method and teaching evaluation.

3.2.1. Teaching design

As can be seen from Tables 1 and 2, when preparing for class, 69% of the teachers will create problem situations for some knowledge points on the question of 'Do you create problem situations for students?'; most of the teachers will take the mastery of knowledge points into consideration when creating problem

situations, but the interests of postgraduates are neglected. Only 37% of the postgraduates thought that the problem situations designed by the teachers could stimulate their interest in learning. Meanwhile, 59% of the teachers thought that lesson planning should focus on reading the curriculum standards and textbooks, and only 4% of the teachers would consider planning activities. In class, as for the degree of classroom rhythm, 37% of the teachers would teach according to the difficulty of the textbook and 40% according to the amount of time and content. Neither of them took into account the needs of postgraduates and their exiting knowledge and experience, and they only taught according to the textbook and the teaching plan, with unscientific classroom teaching steps and time scheduling.

Table1.Instructional design (teacher's perspective)

Survey question	Options	Data	Ratio
When you are explaining a point, do you consider creating problem situations for your students?	Always	47	22%
	Sometimes	147	69%
	Seldom	17	8%
	Never	2	1%
Do you think lesson planning should focus on?	Curriculum standards and textbooks	125	59%
	Student activities	9	4%
	Teaching materials	70	33%
	Teaching design manuscripts	9	4%
What is your main basis for pacing your lectures?	Amount of time and content	85	40%
	The degree of difficulty of the teaching materials	79	37%
	Planned programme before the lesson	49	23%

Table 2.Instructional design (student perspective)

Survey question	Options	Data	Ratio
Whether the problem situations designed by the teacher can stimulate your interest in learning?	Can inspire	187	37%
	Can't be motivated	51	10%
	Depends.	263	52%
	No design	5	1%

3.2.2. Teaching content

As shown in Table 3, 17% of the teachers regard multimedia as an expandable educational resource, and they make full use of multimedia technology to provide real-time case studies, the latest academic research progress and other content, and keep up with the development trend of their professional fields; however, most of the teachers (72%) regard the textbook as the main content of their teaching, and although 41% of the teachers use multimedia appropriately to assist their teaching, there are more or less cases in which they only read from the PPT content in their teaching, resulting in the teaching content being out of touch with reality. However, in teaching, there are more or less cases that only read from the PPT content, and teachers usually convey the information to postgraduates exactly the same as that provided in textbooks,

resulting in the teaching content being out of touch with the reality, lacking in relevant cutting-edge knowledge and realistic development dynamics, which is in contradiction with the requirements of postgraduates' cultivation.

Table 3. Teaching content

Survey question	Options	Data	Ratio
How would you choose what to teach?	Use the textbook as the main teaching content	153	72%
	The teaching content is fully related to the reality	9	4%
	Reasonable selection of teaching content according to students' knowledge and experience	51	24%
What do you think about the use of multimedia?	Multimedia is a necessary tool for classroom teaching	62	29%
	Multimedia is only a supplementary teaching tool	87	41%
	Multimedia is an expandable educational resource	36	17%
	Not all content must use multimedia	28	13%

3.2.3. Teaching styles

The results of the teachers' questionnaire survey are shown in Table 4. In the actual teaching process of the new curriculum, 59% of the teachers are mainly self-narrative, and even if interaction is carried out, most of the teachers (55%) adopt the teacher-student type of interaction, i.e., the teachers ask questions and the graduate students answer them, and there is a lack of sufficient communication and interaction between teachers and students, and students and students. Although 49% of the teachers often organized group discussions with postgraduates, at the end of the discussion the teachers would directly let the postgraduates state the results of the discussion or summarize a correct answer by themselves, without guiding them to shift from lower-order to higher-order learning, i.e., expanding the depth and breadth of the problem through adequate discussion, and enhancing their thinking and ability to construct and apply knowledge. As shown in Table 5, it is inevitable that postgraduates just understand the key points explained by the teacher and lack the ability to think independently. Only 27% of the postgraduates actively participate in the discussion in the classroom, learning initiative, active thinking is obviously insufficient, can not clarify the conditions of knowledge generation and internal logic, can not be public knowledge into personal knowledge, not to mention the depth of knowledge transfer through knowledge mastery, flexible use of knowledge.

Table 4. Information on teaching styles (teacher's perspective)

Survey question	Options	Data	Ratio
Your best teaching methods	Creating problem scenarios that allow students to identify and ask questions	77	36%
	Lecture-based	126	59%
	Activity-based	6	3%
	Tutoring students to learn on their own	4	2%
What type of interaction do you use most often?	Teacher-individual student interaction	58	27%
	Teacher-group interaction	36	17%
	Teacher-class interaction	117	55%

Frequency of group discussions	Student-Student Interactive	2	1%
	Often	364	49%
	Sometimes	62	29%
	Depends on the situation	47	22%

Table 5. Information on teaching styles (student perspective)

Survey question	Options	Data	Ratio
What kind of study style do you use?	Follow the teacher's key points from the lesson	243	48%
	Use existing knowledge and experience to internalize and understand new knowledge	177	35%
	Independent textbook study according to the exam syllabus	86	17%
Do you actively participate in discussions in class?	No, because I am afraid of being laughed at if I make a mistake	61	12%
	Yes, it improves your ability to analyse problems	137	27%
	It depends.	268	53%
	It's always the same people, not the whole group.	40	8%

3.2.4. Teaching Evaluation

Table 6 survey found that 47% of teachers use exams and quizzes to evaluate graduate students' memorization of theoretical knowledge, and 33% of teachers assess graduate students' learning effects through small papers or works, writing research reports and so on. It can be seen that most of the current evaluation indexes of postgraduate education are teachers' evaluation of postgraduates, focusing on the degree of postgraduates' knowledge mastery, paying too much attention to result-based evaluation and ignoring the evaluation of the learning process.

Table 6: Teaching Evaluation

Survey question	Options	Data	Ratio
What type of course evaluation do you use?	Quizzes and exams	100	47%
	Assessment of students' learning effectiveness	70	33%
	A combination of quizzes and exams and evaluation of the teaching process	43	20%

3.3. Result

Based on the analysis of the above statistical results, many of the current problems of postgraduate education are related to the 'teaching-centred + knowledge transfer'. In this model, teachers are at the centre of education, focusing on how to organize and present the teaching content. Firstly, from the point of view of teaching design, teachers focus on the knowledge they teach, and the related materials, courseware and cases they prepare are all based on the knowledge system, without any systematic thinking and designing for the interests and personalities of postgraduates. Secondly, in terms of teaching content, teachers mostly use textbooks and teaching aids as their teaching content. On the one hand, the amount of teaching information

is limited, and the ability of knowledge expansion and migration is poorⁱⁱⁱ; on the other hand, they fail to closely link the teaching content with the frontier of the discipline and the actual development, and the learning process evolves into the simple acceptance of the textbooks, teaching aids and the teacher's explanation, which ignores the cultivation of postgraduates' ability to solve the real problems, especially the cultivation of high-level talents with the ability of inquiry, complex thinking, innovation and creativity. Thirdly, from the perspective of teaching methods, traditional education methods such as forced indoctrination and mechanical cultivating still occupy a large proportion, while interactive, inquiry, experiential, embodied cognition and other generative and constructive education methods have not yet occupied the dominant position in the classroom; postgraduates in the classroom have not yet set up a sense of the main body, the enthusiasm for learning, the degree of participation in general is not high, and the cultivation of innovation ability has been weakened. Fourthly, from the teaching evaluation, the degree of mastery of existing knowledge is an important criterion for teachers to evaluate graduate students, while the personalized understanding of knowledge, the thinking process and the complexity and flexibility of the use of less evaluation, and evaluation in a single way, focusing on the results but not the process, and focusing on the objective but not the subjective, it is difficult to scientifically measure the effectiveness of teaching and the actual level of the graduate students, the quality of talent cultivating can not be guaranteed, and graduate students can not take the initiative to learn, The quality of talent cultivating cannot be guaranteed, and the initiative, enthusiasm and creativity of postgraduates' learning cannot be fully and effectively mobilized.

In short, under the mode of 'teaching-centred + knowledge transfer', postgraduates usually show low interest in learning, lack of motivation to learn, lack of awareness and ability to learn independently, and their mastery of knowledge is usually not systematic, in-depth and solid, and they are not able to construct knowledge efficiently, not to mention the ability to apply knowledge flexibly, which seriously hinders the improvement of postgraduate education level. The improvement of the level of postgraduate education is seriously hindered.

4.From 'teaching-centred' to 'learning-centred' --- the logical motivation for improving the quality of postgraduate education

The education model of 'teaching-centred + knowledge transfer' has long been affecting various levels of education, including postgraduate education. With the continuous improvement of China's higher education goals, especially the deepening of education reform and the introduction of advanced education theories from abroad, the emergence of digital modern education technology and means, the use of new education model instead of the old education model has gradually become the consensus of the majority of university teachers, including graduate teachers. From 'teaching' to 'learning', from knowledge transfer to knowledge generation and construction will become the common choice of teachers and students and the whole society.

From the view of the main body of education, 'teaching-centred + knowledge transfer' teaching mode, based on the representativist, behaviourist view of knowledge, that knowledge is the subjective representation of the objective, knowledge is objective, not subject to the transfer of human will, beyond the space and time, absolute correctness, is equivalent to the truth; and education is the process of knowledge acquisition by the learner. process. Therefore, the teacher has mastered the knowledge is equal to master the truth, and logically become the main body of education, has the right to speak throughout the educational process, on this basis, the knowledge they have mastered to graduate students will have the logical legitimacy. However, with the birth of modern epistemology, especially the emergence of generativism and constructivism, the representationalist view of knowledge has caused a great impact. The constructivist view of knowledge holds that knowledge is acquired by the subject through practice and interaction with the object, and the subject plays a decisive role in the process of acquiring knowledge. In other words, each

person receives knowledge through his or her own unique cognitive structure, and can only receive knowledge that we can receive and that belongs to us, which is why for the same thing, different people's perceptions are more or less different. In addition, knowledge (including natural sciences) is not an absolutely correct truth, but merely an assumption to be falsified^{IV}. As a result, the teacher is not justified as the subject of graduate education. This is the theoretical basis for this study to advocate 'learning-centred + knowledge construction'.

From the viewpoint of education process, 'teaching-centred + knowledge transfer' education model, teachers as the main body of education, the control of the whole process of teaching, will inevitably weaken or even dissolve the subjectivity, enthusiasm and creativity of postgraduates in the process of education, and reduce their interest in learning, which will have serious consequences for the quality of postgraduate cultivating. On the other hand, 'learning-centred + knowledge construction' makes clear the central position of postgraduates in education, and the whole education process, from teaching design, teaching content to teaching methods and teaching progress, all revolves around postgraduates, giving full consideration to their personalities, interests, hobbies and strengths, and creating appropriate scenarios, using inquiry-based, interactive and interactive methods, in accordance with the theoretical requirements of knowledge generation and construction. In accordance with the requirements of the theory of knowledge generation and construction, we create appropriate scenarios and adopt diversified teaching methods such as inquiry, interactive, experiential and immersion, so that postgraduates can independently generate and construct knowledge in an embodied cognitive way, and the knowledge acquired in this way can be completely integrated into the original cognitive structure of postgraduates and become a part of their bodies, so as to improve their ability to acquire knowledge and its effectiveness.

From the viewpoint of educational objectives, 'teaching-centred + knowledge transfer' is mainly concerned with the relevant requirements stipulated in the syllabus, of course, there are teachers who will guide postgraduates to participate in scientific research in combination with their own scientific research topics, so as to improve postgraduates' comprehensive ability in various aspects in specific scientific research practice. However, due to the traditional teaching mode, the main focus is still to complete the requirements set out in the syllabus, which inadvertently restricts the teachers and students. However, the 'learning-centred + knowledge construction' mode is open in educational objectives, to improve the cognitive structure of postgraduates and improve their comprehensive ability for the purpose of the teacher's guidance, help, independent learning, independent inquiry, independent generation, construction of knowledge and ability, the goal is far more than the requirements set out in the syllabus, teachers and students can not be bound by the syllabus, into the 'sea is wide open'. The goal is far beyond the requirements of the syllabus, teachers and students can not be bound by the syllabus, into the 'sea is wide enough for the fish to leap, the sky is high enough for the birds to fly' realm.

From the viewpoint of educational evaluation, the 'teaching-centred + knowledge transfer' model is based on the representationalist view of knowledge, which is considered to be objectively real and true. Therefore, the evaluation of postgraduates focuses on the right and wrong of knowledge and the quantity of knowledge, and less on the evaluation of their independent learning ability, discursive ability, knowledge construction ability, etc.; the evaluation method often adopts the objective evaluation (such as questions, assignments, exams, thesis, works, etc.), the quantitative (tools) evaluation (which parts and how much knowledge have been mastered, etc.), and the result (right or wrong) evaluation, etc., which is relatively single, and the teachers are the main ones with low participation of the postgraduates. The evaluation method is relatively single and teacher-oriented, with low participation of postgraduates. On the other hand, the educational model of 'learning-centred + knowledge construction' is based on the generative and constructivist view of knowledge, which believes that knowledge has the characteristics of generation, construction and embodiment, therefore, when evaluating the effectiveness of teaching, not only the amount of knowledge mastered should be evaluated, but also the graduate students' ability to learn independently

and construct knowledge (original knowledge structure and newly generated knowledge structure) should be evaluated. Therefore, the evaluation of the teaching effect should not only evaluate how much knowledge is mastered, but also evaluate the independent learning ability, the ability to construct knowledge (original knowledge structure and newly generated knowledge structure) and the learning process of the postgraduates; there should be not only objective evaluation, quantitative (instrumental) evaluation and result evaluation, but also subjective evaluation, qualitative (value) evaluation and process evaluation; not only should there be teacher's evaluation, but also evaluation of postgraduates' own and classmates' joint participation. The evaluation should not only be able to scientifically reflect the effect of teaching, but also clarify their thinking and way of thinking, guide students to gradually master dialectical thinking and complex thinking, and promote the improvement of graduate students' ability of independent learning, independent inquiry, and constructing knowledge. In addition, the evaluation index system needs further in-depth study to establish a set of scientific, reasonable and easy-to-operate evaluation system suitable for 'learning-centred + knowledge construction' mode.

In conclusion, we can clearly see the difference between the two modes of postgraduate education (see Table 7 for the comparison of the two modes) and the logical motivation of the latter to improve the quality of postgraduate cultivating.

Table 7: Comparison of the two educational models

	'Teaching-centred + knowledge transfer'	'Learning-centred + knowledge construction'
Educational theories	Representational, behaviourist	Generative, constructivist
Knowledge	Objective reality, truth	Subjectivity, individuality
Subjects of education	Teacher	Student
Focus of education	Results, holistic, theoretical, intellectual, professional	Process, individual, practice, competence, culture
Educational evaluation	Objective, quantitative (instrumental) and outcome evaluation	Subjective, qualitative (values) and process evaluation

5.Implementing the 'learning-centred + knowledge construction' education model to comprehensively improve the quality of postgraduate cultivating

It should be said that postgraduate education with postgraduate students as the centre is not a new topic raised only today, but the reason why this study raises it again is that through the questionnaire survey, it is found that 'learning as the centre', which is a concept of education known to almost everyone by teachers in colleges and universities, is not ideal in the process of concrete implementation due to a variety of reasons, and has not been carried out to the point. The concept of 'learning-centred' was found to be unsatisfactory in practice for various reasons. In order to put 'learning-centred' into practice, it is necessary to link it with 'knowledge construction', so as to completely abandon the 'teaching-centred + knowledge transfer' model, thus creating a new world of postgraduate education. In order to completely abandon the 'teaching-centred + knowledge transfer' model, a new world of postgraduate education can be created. To this end, the following points should be achieved:

5.1.Innovative educational concepts

The traditional 'teaching-centred + knowledge transfer' education model is based on behavior and representationalism^v, which emphasizes the teacher as the main body, knowledge-oriented, 'teaching' rather than 'learning'. ' , through the transfer of knowledge to carry out educational activities, the purpose of

education is to enable students to master more knowledge. The 'learning-centred + knowledge construction' is based on generation and constructivism, i.e., knowledge cannot be acquired through transmission, knowledge transmission is only a superficial phenomenon, and the transmitted knowledge can only become students' "own knowledge" if it is processed, recognized and accepted by students' own original cognitive structure system and becomes an integral part of students' cognitive structure. 'Their own knowledge', so that the knowledge has value and significance, only to be able to cite one against three, flexible use, innovation and creativity. Therefore, postgraduate education must innovate the concept of education, so that teachers deeply understand that the main body of education is a graduate student, graduate students play a decisive role in the process of education, under the guidance and assistance of teachers, through independent learning, independent inquiry, independent construction and generation of knowledge. Only by focusing on the concept of postgraduate education can we form a long-term mechanism for the continuous improvement of the quality of postgraduate cultivating.

5.2. Constructing New Teacher-Student Relationship

To build a new type of teacher-student relationship, that is, 'with graduate students as the main body, the teacher as the leading'. 'Graduate students as the main body', that is, to create the appropriate situation, guide graduate students to independent inquiry, experience the process of knowledge discovery, through student-student, teacher-student dialogue and collaboration, mutual collision, to obtain the ideas and methods of problem solving. In this process, graduate students, through their own original knowledge structure, experience and ability, deeply understand and grasp things, give meaning to things, so as to independently generate and construct new knowledge and ability; 'Teacher-led' refers to the teacher's organization, guidance, support and assistance to graduate students' independent learning and inquiry, to ensure that this process can be orderly, standardized, efficient and quality. In this process, attention should be paid to grasp the boundaries of 'subject' and 'leading', neither overstepping nor being rigid. The relationship between the 'subject' and the 'leading', the size of the role of the two, not a layer of invariance, but inversely proportional to the relationship, should be adjusted in a timely manner according to the situation, the greater the role of the 'subject', the 'leading' role of the 'leading'. The greater the role of the 'subject', the smaller the role of the 'dominant'; and vice versa. The value orientation should point to the role of the 'subject' in the education process, which is determined by the constructivist value orientation.

5.3. Focus on shaping innovative personality

Compared with undergraduate education, postgraduate education pays more attention to personalized cultivating. The constructivist view of knowledge is that knowledge is acquired by the cognitive subject through self-construction, and the cognitive structure varies according to the subject's experience, so the way and process of acquiring knowledge are also different, and it is not possible to cultivate in a uniform way. On the contrary, on the basis of respecting their personality traits, interests and cognitive abilities, and combining their unique life experiences, differentiated cultivating should be carried out to strengthen the advantages of different learners' personalities, ways of thinking and internal and external resources, so as to build on their strengths and avoid their shortcomings, and to gradually form and expand their own characteristics of learning ability and competitive advantages. In this case, although the knowledge acquired by postgraduates through their own personalized thinking and unique ways is common, the way and process of acquiring it are different, and their understanding and grasping of it are also different, and the knowledge so acquired is also personalized, innovative and creative, and has the same value and significance.

5.4. Strengthening practical education

According to constructivism, practice plays an indispensable role in the process of constructing knowledge. Knowledge is the result of the cognitive subject's interaction with the external world through

practice, and practice is the intermediary and communication bridge between human beings and the external world. It is through a variety of activities, including communication, interaction, cooperation, experimentation, practice and so on, that a close link is established between human beings, human beings and society, and human beings and nature, thus providing the possibility for human beings to know themselves, human society and the natural world. At the same time, it also further improves the practical and cognitive ability of human beings. Compared with undergraduates who focus on digestion, accumulation of knowledge and construction of knowledge framework, postgraduates need to solve practical problems and open up new areas that have not been involved before, therefore, postgraduate education needs to carry out more specific, in-depth and detailed practical activities on more occasions, in larger and more complex areas, so as to achieve the unity of knowledge and action, the conversion of knowledge and action, knowledge and action, and to improve their comprehensive ability.

5.5. Creating inspiring teaching situations

Constructivist view of knowledge tells us that knowledge has a context, is a product of a certain historical social and cultural background, is a product of a specific environment. The lack of specific contextual knowledge can not be produced, and does not have a universal, inevitable truth. Therefore, one of the purposes of postgraduate education is to cultivate its ability to study and solve practical problems. In the process of postgraduate education, we must change the traditional education ignoring the situation only to teach the practice of knowledge, as far as possible to create a specific, vivid, inspiring situation, knowledge and its production of the combination of the situation, so that can stimulate postgraduates to learn, explore the enthusiasm of knowledge, to be able to be in the situation, from a number of senses to feel the role of the object on their own, to take targeted measures and programmes and the context of the interaction In the interaction, we can grasp the nature of things, the development of dynamics, interconnections and cause and effect, logical relationships, which is also the significance of immersive teaching, embodied cognition. The knowledge gained in this way has practical significance and vitality, and can be transformed into the flesh and blood of the learner, becoming an integral part of the organism.

5.6. Promoting the diversification of evaluation

The education model for the purpose of transferring knowledge often focuses on evaluating the amount of knowledge mastered, and is mainly evaluated by the tutor, which is a single evaluation method and cannot well promote the improvement of the quality of postgraduate education. The education model for the purpose of knowledge construction, on the other hand, advocates that we should go beyond the single evaluation of knowledge mastery and conduct diversified and comprehensive evaluation. There should be not only objective evaluation, quantitative (instrumental) evaluation and outcome evaluation, but also subjective evaluation, qualitative (value) evaluation and process evaluation. There should be not only the evaluation of the supervisor, but also the evaluation of the graduate students themselves and their classmates. Subjective evaluation, qualitative (value) evaluation can not only make up for the inadequacy of objective evaluation, but also can continue to clarify the value orientation of education, to avoid the excessive pursuit of 'instrumental rationality' to the neglect of the pursuit of 'value rationality' (such as excessive pursuit of examination results to the neglect of their own learning). The postgraduates themselves and their classmates can experience and strengthen their own advantages, find and make up for their own deficiencies, complement each other's strengths and weaknesses, and promote each other for mutual improvement by participating in the evaluation together.

5.7. Accelerating digital empowerment

Digital technology is a powerful booster to improve the quality of postgraduate education, and with its rapid development, its booster function will become more perfect and powerful. The so-called digital

technology refers to the science and technology accompanied by electronic computers, through the use of certain equipment will be a variety of information, such as graphics, text, sound, image, etc., into a computer can identify the binary digits '0' and '1' after the operation, processing, Storage, dissemination, restore the technology. There are many kinds of digital technology, including big data, cloud computing, Internet of things, blockchain, artificial intelligence and integration of these five major technologies of the meta-universe. Digital technologies are now pervasive in all corners of human life. This study only focuses on the integration of digital technology and the 'learning-centred + knowledge construction' teaching mode, and explores how to help improve the level of postgraduate education.

Firstly, digital technology provides a strong technical guarantee for context creation. According to the theory of constructivism, context is the specific environment for the creation of problems, which is the prerequisite for the construction of knowledge. Postgraduate education can create a variety of different realistic contexts through digital technology, which are omni-directional, multi-angle, dynamic and three-dimensional in front of the learner, so that he or she can have the feeling of being there. Enhance the immersion and interaction with the learning process, to make up for the shortcomings of the existing postgraduate education 'insufficient participation'. This is to mobilize graduate students' interest in learning, independent learning and exploration to lay a good foundation.

Secondly, digital technology is also able to simulate, simulation, separation, combination of things, the development of things, changes in multi-dimensional, multi-directional, three-dimensional display, clarity, visualization of their own imaginations, and then into a specific tangible products, to achieve independent, personalized creation; can also be simulated by changing the role of the external environment on the thing, so that the learner can be more in-depth, Detailed grasp of the composition, nature, development trend and law of things, as well as the interactions between things and things, to deepen the understanding of the things themselves, the relationship between things, the ability to raise awareness of complex things; In addition, teachers and students can also use simulation, simulation technology and simulated things to interact with their own design solutions, coping strategies entered into the computer, in order to verify the effectiveness of the effect. This plays a positive role in strengthening the practice of graduate students and improving their research and problem-solving abilities.

Thirdly, digital technology provides teachers and students with a huge amount of convenient and easily accessible learning resources, thus making it truly possible for postgraduates to learn independently, explore independently, generate and construct knowledge and ability independently. Learning-centred, problem-oriented, and research ability-cultivating postgraduate education must adopt open-ended teaching, free from the restrictions of specialties and fields, and free from the influence of existing knowledge, which requires a variety of cross-field, interdisciplinary massive resources to meet the above requirements, while digital can optimize the allocation of educational resources through a variety of advanced storage, classification, sorting, linking, searching and other technologies to break the Educational barriers, convenient and fast for teachers and students to provide rich and diverse personalised learning resources.

Finally, digital technology provides unlimited possibilities for the 'learning-centred + knowledge construction' mode. For one thing, ChatGPT has a powerful ability to reserve, understand, generate, match, analyse and optimise text, i.e., it can obtain relevant information between knowledge through massive language data and make innovative combinations. The integration and mutual promotion of knowledge points between different disciplines is a return to the nature of science, helping postgraduate students to generate new growth points and breakthroughs in science^{vi}; secondly, ChatGPT provides knowledge services beyond a single field and discipline, enabling postgraduate students to break through the traditional path of knowledge production through human-computer collaboration, and to establish vertical new and old knowledge, horizontal In a larger scope and larger scale of knowledge production, the connection of new and old knowledge vertically and interdisciplinary knowledge horizontally will be established, and the isolated flat knowledge structure will be developed in the direction of diversified and three-dimensional

development; Third, ChatGPT can optimize the data and algorithm model of intelligent services, understand the learning needs, personality, ability and interest of graduate students in the process of interactive learning, and realize large-scale personalized learning and cultivating.

6. Conclusion

Postgraduate education shoulders the historical mission of cultivating high-level talent growth, how to effectively improve the quality of postgraduate cultivating, improve the comprehensive quality of postgraduates, to solve the long-term plagued our country for many years of talent innovation, creativity is not strong, lack of competitiveness with the world's top talent and other issues, it becomes an urgent problem in front of the government, colleges and universities, scientific research institutes and the whole society. This study focuses on the actual problems in the cultivation of postgraduates in colleges and universities, combines constructivism and other educational theories, and puts forward the cultivation mode of 'learning-centred + knowledge construction', in order to impact on the current status quo of postgraduates' education, and make significant changes to the concept of education, teacher-student relationship, teaching design, teaching methodology, and teaching evaluation, thus promoting the quality improvement of postgraduates' cultivation in our country. The quality of postgraduate cultivating will be qualitatively improved, and the ambitious goal of 'achieving overall modernisation of education and entering the ranks of education powerhouses by 2035' put forward by the Central Committee of the Communist Party of China (CPC) and the State Council in 'Modernisation of China's Education 2035' will be achieved.

References

- i. HONG Dayong. Putting the Guiding Principles of the 20th CPC National Congress into Practice to Accelerate the Construction of A Great Country in Postgraduate Education. J. Degrees & Graduate Education, 2023(09) : 1-7.
- ii. YIN Haiqiang. Analysis of College Students' Learning "Absence" and Cultivation of Self-directed Learning Ability. J. Chinese University Teaching, 2020(7) : 61-66.
- iii. CHEN Fan. How to Make Student-centered Teaching Possible---An Empirical Study on the Status Quo of Undergraduate Classroom Teaching in 51 Universities. J. Higher Education Research, 2017,38(10) : 75-82.
- iv. LIU Qin. Liu Qing. Lecture Notes on Liu Qing's Western Modern Thought. M. Beijing : New Star Publishing House, 2021,p.139.
- v. ZHANG Liang. On the Reconstruction of the Concept of Curriculum Knowledge: From Representationalism to Enactivism. J. Chinese Educational Sciences, 2019,2(01) : 110-120+142-143.
- vi. LUO Qin, YAO Jiali. Alienation and Remodeling of Postgraduates' Knowledge Concept in the AI Era. J. Graduate Education Research, 2022,(01) : 30-37.